U.S. Department of the Interior

Water and Power Resources Service

O'Neill

Nebraska

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Construction of the O'Neill Unit will produce several important benefits:

- A dependable water supply for 77,000 acres of farmland;
- Water-oriented outdoor recreation opportunities and improved fish and wildlife habitat;
- Incidental flood control;
- State and local economic benefits resulting from construction activity, additional employment, and sustained irrigated agriculture;
- Purchase and permanent protection of scenic Smith Falls as a recreation area.

Equally important, construction of the project will mean a dependable water supply for future generations.

Norden Dam is the major feature of the project and will be located about 18 miles northwest of Ainsworth. The earth dam will rise 182 feet above the streambed and extend 3,700 feet in length. Norden Reservoir will cover nearly 6,250 acres. It will have a 70 mile shoreline and an active capacity of about 125,000 acre-feet (an acre-foot is the amount of water required to cover an acre of land to a depth of 1 foot, or 325,857 gallons). A potential for hydroelectric power production exists at Norden Dam.

The project will also include a pumping plant to be built about 5 miles southwest of Springview. The pumping plant will provide water to the Springview Canal.

O'Neill Canal, the major feature of the distribution system, will deliver water to land in Keya Paha and Holt Counties. First 28 miles will be concrete lined, the remainder will have a compacted earth lining.

In all, six canals and associated lateral systems will form the distribution system and carry water to 77,000 acres of land.

The project will be constructed with as little adverse effect on the environment as possible. Extensive consideration is being given area fish and wildlife, existing vegetation, and scenic areas. Historical, archeological, and paleontological sites will be surveyed, preserved and protected. Positive and negative effects of the project on the area's environment are listed in the final environmental statement and supplements.

Concerning ground-water quality, the Environmental Protection Agency concurred with the conclusion that quality would be better with the project as compared to future conditions without the project. A memorandum of understanding between the reclamation and irrigation districts will help protect water quality in the project area. The memorandum resulted from an agreement among the districts, State of Nebraska, Water and Power Resources Service, and EPA. The memorandum states that water users in the district will conserve water and follow good irrigation practices in order to reduce the amount of nitrogen entering the ground water.

With world demand for agricultural products on the rise, increased crop and livestock production is emerging as a major priority. The O'Neill Unit will help produce greater crop yields from each acre of land — and help meet the demand for more and more food.

History

Year after year Nebraska's hard-working farm people use the soil and climate to turn the State into one of the top food producing States in the Nation. But it hasn't always been this way.

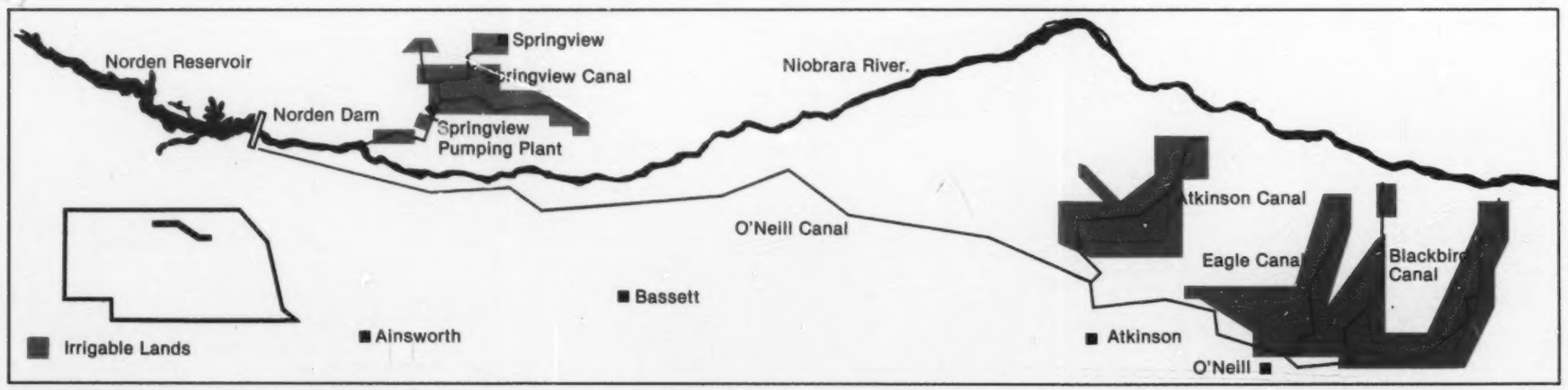
A hundred years ago most of Nebraska was covered with grass. Pioneers found it difficult to plow the tough prairie sod. Water often had to be hauled many miles from rivers and streams to homesteads.

Farming was filled with peril. Promising crops withered under hot winds and drought. Usually docile streams and rivers spilled from their banks, destroying crops, property — and lives.

But the pioneering Nebraska spirit prevailed — for the most part — over Nature's eccentricities. Innovative and farsighted men and women found there was much they could do to soften the harshness of their environment.

Water resource development began in the State and today more than 460,000 acres of cropland are irrigated from Water and Power projects alone.

The need for irrigation water to supplement rainfall continues. In north-central Nebraska, extensive pumping from the large number of wells has caused serious declines in ground-water levels.



Extensive study during the 1950's and 1960's showed that a portion of north-central Nebraska could benefit significantly from the development of a water resource project along the Niobrara River. Studies included engineering, economics, requirements for fish and wildlife, potential for recreation, water supply, irrigation, flood control, and others. A site for a dam and reservoir was consequently located northwest of Ainsworth.

In September 1972, a comprehensive environmental statement concerning the O'Neill Unit was filed with the Council on Environmental Quality. Later in the year, the project was authorized for construction by Congress.

Repayment contracts were signed with the project sponsors — the North Central Nebraska Reclamation District and the Niobrara Basin Irrigation District — and construction began in May 1976. A bridge on an access road to the Norden damsite was the first feature constructed. Construction activity stopped in 1977, however, when the U.S. District Court found the environmental statement inadequate. Action is underway to comply with the instructions of the court.

Local people demonstrated their support for the project by overwhelmingly approving the financial obligation of a water supply contract at a special election during 1979. All qualified electors within the reclamation district were eligible to vote — not just the project's direct beneficiaries.

Benefits

Irrigation

Today's farmer faces demands and challenges far different from those faced by the pioneers. Operations require higher and higher capital investments.

New crop varieties are increasing yields, and fertilization, weed, and insect control are more important than ever.

Crop production — the number of bushels of grain or tons of feed grown on an acre — must also increase. But rainfall in north-central Nebraska averages only 21 inches annually. This lack of precipitation limits production to less than one-third that possible in irrigated areas.

For the past 25 years, many farmers have been pumping irrigation water from wells. Center pivot sprinkler irrigation systems in Holt County alone increased from 200 in 1965 to 1,564 today. Consequently, water levels have declined more than 20 feet in some areas.

Without additional surface water to reduce pumping and recharge ground-water aquifers, many irrigation wells will fail and many farmers will be forced to return to dryland farming.

A combination of ground and surface water is necessary, therefore, to maintain the existing level of agricultural production and to develop other suitable lands.

The O'Neill Unit's dam and reservoir, pumping plant, and delivery system will provide needed surface water to more than 77,000 acres. Benefits from irrigation are expected to total nearly $21 million annually.

Recreation

Outdoor recreation is an important part of most Americans' lives. And of the types of recreation available, water-related activities are the fastest growing.

The O'Neill Unit will provide opportunities for thousands of outdoor lovers and Norden Reservoir is expected to be one of the most scenic areas of its type in Nebraska.

In addition, 776 acres of land are being acquired for recreational use. Included is the area around Smith Falls, near the upper end of the reservoir. This scenic area will be more accessible to the public and will be projected for future enjoyment.

A study by the Bureau of Outdoor Recreation recommends constructing facilities for picnicking, camping, boating, hiking, swimming, and other activities.

Hunting and fishing opportunities may also increase as a result of the O'Neill Unit. Almost all of the land along the Niobrara River is currently privately owned and access is very limited in many areas. Many prime areas obtained with the project will be opened to the public for recreation.

Although a very short "white water" area will be covered by the reservoir, canoeing will still be possible. Many canoers enter the river at Valentine and move through the Fort Niobrara Wildlife Refuge to Smith Falls. This reach of the river will be unaffected by the project. Stillwater canoeing on the upper reaches of the reservoir will be an added attraction.

Sightseeing will also remain a prime activity. The steep, wooded valley walls, numerous canyons, grassy meadows, and unpolluted streams combine to make the area one of the most beautiful in the region.

It is estimated that 164,000 people will visit the area each year. The monetary benefit of these visits is estimated at $323,000 annually.

Fish and Wildlife

Clean, fresh water is vital to fish and wildlife. Without abundant, usable water, most animal life could not exist. The O'Neill Unit will not only preserve existing wildlife in most of the project area, but will, in many instances, provide increased habitat.

More than 400 different species of birds and 100 species of mammals may be present in or migrate through the area. Common birds include wild turkey, grouse, prairie chicken, pheasant, quail, dove, hawk, and many types of waterfowl.

Common mammals include mule and white-tail deer, antelope, cottontail rabbits and jackrabbits, squirrels, coyotes, prairie dogs, and many others.

Fish in the Niobrara River include pike, perch, catfish, sunfish, sucker, minnow, and carp. Rainbow and brown trout are found in some areas.

The O'Neill Unit will include 4,697 acres that will be managed specifically for accommodating fish and wildlife. The Fish and Wildlife Service has recommended construction of a fishing pool in the stream below Norden Dam and a barrier above Norden Reservoir on Fairfield Creek to stop migration of rough fish into the trout stream.

Deer crossings, deer escape devices, and fencing will all be used to prevent loss of game in the concrete-lined section of O'Neill Canal.

In all, fish and wildlife benefits resulting from the O'Neill Unit will produce an estimated $119,000 annually.

The Water and Power Resources Service is consulting with the Fish and Wildlife Service concerning compliance with the Endangered Species Act.

Cost and Repayment

Estimated cost of the O'Neill Unit based on 1978 prices is $200 million. Of that cost, $192.3 million are reimbursable. Repayment will consist of: irrigation, $45.2 million; recreation, $1.8 million; fish and wildlife, $0.4 million; and Pick-Sloan Missouri Basin Program power revenues, $144.9 million.

Nonreimbursable costs total $7.9 million. These costs, considered to be a desirable Federal investment, consist of: flood control, $0.6 million; fish and wildlife, $2.2 million; recreation, $2.1 million; preauthorization investigation costs, $1.1 million; and cultural resources costs, $1.9 million.

The O'Neill Unit has a benefit-cost ratio of 2.7 to 1. This means that every $1 invested in the project will return a benefit of $2.70.

Initially, Water and Power will operate and maintain the project. When it is completed, the reclamation district will assume the responsibility of operating and maintaining the irrigation works.

Recreation and fish and wildlife lands and facilities will be operated and maintained by an appropriate State agency.

The economic impact of the O'Neill Unit on Nebraska will be significant. University of Nebraska studies conclude that every dollar of increased production resulting from irrigation generates nearly $8 of new business in the State. That translates into about a $183 million increase annually in economic activity.

Land Acquisition and Relocation

Land required for the dam, reservoir, canals, laterals, recreation, fish, wildlife, and other uses totals 30,355 acres. "Estimated fair market value," determined by competent and impartial staff or contract appraisers, is paid for all land and improvements. Landowners will not be offered less than the appraised price.

Former owners, or operators, may lease the land until it is needed for construction. Salvage rights to buildings may also be negotiated. In addition, if only part of the land is acquired, leaving the remainder less valuable than before, the owner will be paid for the loss. This difference is called severance damages. Whenever possible, acquisition of land will be scheduled to allow harvesting of crops prior to construction. If land is needed before crops are harvested, farmers will be paid for those crops.

The Water and Power Resources Service tries to be reasonable and fair at all times. A mutually satisfactory arrangement for a possession date of the acquired property by the United States usually can be worked out. A landowner doesn't have to accept Water and Power's offer for land. Where an agreement cannot be reached, Water and Power will file suit in Federal court to acquire the land by "condemnation." Fair market value is then determined by the court.

People, farms, and businesses required to move because of land acquisition for the O'Neill Unit also may be paid for moving and related expenses. The government also will provide relocation assistance. Only a few people will be required to move because of the project.

Additional information concerning acquisition of property and relocation assistance is contained in Public Law 91-646. A special booklet containing information about these programs is available from the Water and Power Resources Service, the North Central Nebraska Reclamation District, and the Niobrara Basin Irrigation District.

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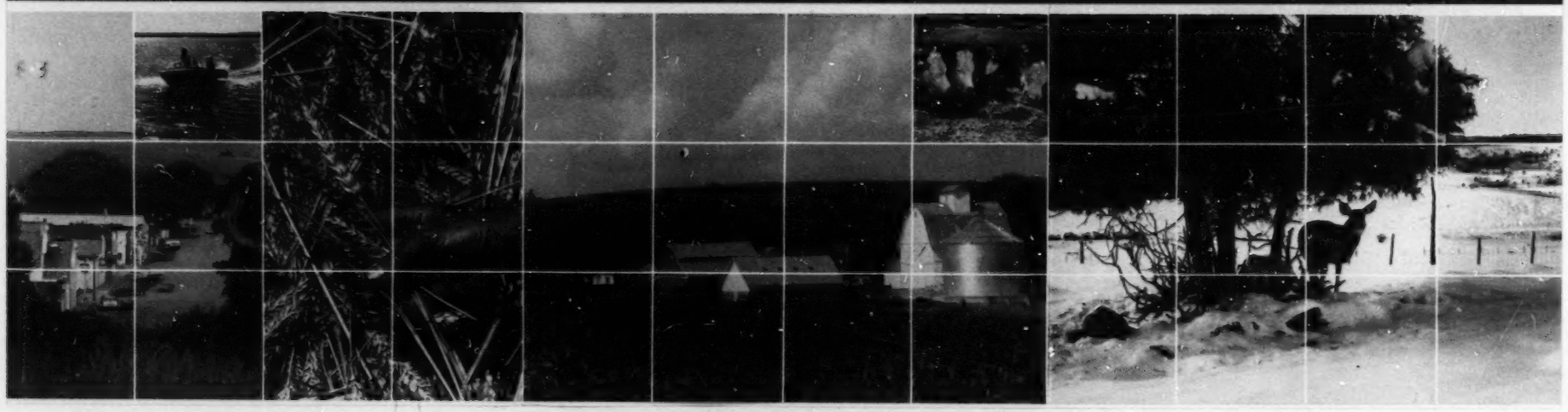

Norden Dam:		
Type	Rolled Earth	
Height	182 feet	
Length	3,700 feet	
Volume of embankment	8,200,000 yd³	
Norden Reservoir:		
Active conservation capacity	125,000 acre-feet	
Total capacity	411,000 acre-feet	
Shoreline	70 miles	
Surface area	6,248 acres	
Springview Pumping Plant:		
Total horsepower	6,050	
Total design capacity	132 ft³/s	
Total dynamic head	325 feet	
Canals and Laterals:	(FT³/S)	(MILES)
O'Neill Canal	1,400	100
Springview Canal	130	16
Atkinson Canal	280	17
Eagle Canal	200	16
Blackbird Canal	180	17
Laterals	4 to 80	195

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

Artists rendering of Norden Dam and Reservoir